RURAL INDIA

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" Salvation of India lies in Cottages. "

—*MAHATMA GANDHI*

PRIME MINISTER SEEKS TEMPORARY RETIREMENT

IN the course of his reply to a correspondent in a recent Press Conference in Delhi regarding his reported temporary retirement from office and his letter to Chief Ministers of States in that connection Shri Nehru is reported to have stated :—

"I have said that I feel stale. My body is healthy, as it normally is. But I do feel rather flat and stale and I do not think it is right for a person to feel that way, and I have to deal with vital and very important problems. I am not fresh enough. There has to be some creativeness of mind. I have had eleven and half years of office continuously without a day's respite. I think, I may have some further years of effective service, because I am bodily fit and, I cannot judge my own mind, I do not think that it is slipping. But it is, I think stale and requires freshening up".

That indicates to a feeling of mental exhaustion by the Prime Minister to do full justice to the high office that he holds and he wants to avail himself of a short holiday to regain freshness of mind.

If shri Nehru confesses to a sense of mental staleness and exhaustion—and nobody else than the Prime Minister himself could realise it better–that dullness has already communicated itself to the machinery of Government administration and the Congress organisation. A succession of upheavals over one issue or the other has been a normal feature of the Congress organisation in various States and there are unmistakable signs of internal disintegration of the party. Likewise, economic situation in the country is critical, if not frightening, and the fate of the Second Five-Year Plan is in a melting pot. This together with deterioration and demoralisation set in the administrative machinery, of which Mundhra scandal has been the latest shock, should naturally unnerve and exhaust any giant of man.

Loss of trusted colleagues at such a critical juncture in the death of Maulana Azad and the circumstances under which Shri T. T. Krishnamachari has had to resign has been a severe strain on Shri Nehru. In his own words, the Mundhra episode has made him sadder and older by a few years. One who has had to pass through severe mental strain and agony of the soul continuously for a long period of about 12 years can hardly he expected to retain freshness of mind and creative faculties unimpaired. Obviously, such a person, however indispensable he may be, deserves rest and a well-earned holiday to regain his freshness and mental equipoise.

Will he be allowed to have it ?

Obsessed with a similar feeling Shri Nehru desired to be temporarily relieved from the burdens of office some four years back. In those days, he carried

both the responsibilities of the Congress President and that of the Prime Minister. Indispensable that he has been to the nation now for many years, he was prevailed upon by the colleagues to continue as Prime Minister, while he was relieved of the responsibilities of the Presidentship of the Congress by electing Shri Dhebar in his place. Thus he stayed on as the head of the Government and also virtually as surpreme director of the Congress organisation all these four years without availing himself a short leave he had asked for.

Between 1954 and 1958, there has been marked deterioration in political, economic and administrative situation in the country causing anxiety to the nation. The admitted dullness and tiredness is apparent to anybody, the way shri Nehru has begun to lose his temper and the monotony, repetitions and contradictions one finds in his too numerous speeches. His failure to evolve right type of policies whether in the matter of solving food or economic problem, toning up and raising the efficiency of the administration, eradicating corruption, checking enormous wastages, smooth and harmonious working of the Congress organisation and to see them dexterously executed are obvious symptoms of mental exhaustion of which Shri Nehru complains. With this background of all-round deteriorating and confusing situation, it would be rather suicidal for his Congress colleagues not to allow Shri Nehru to relinquish the burdens of his office and to enjoy a quiet holiday and to continue the heavy burden of office in his present state of mental exhaustion. A repetition of the experience of 1954 will not only demonstrate moral and political bankruptcy of the present leadership of the Congress but will also do immense injury to the cause of the nation for which they are mainly responsible.

Who should carry the burdens ?

Shri Nehru's temporary retirement together with early prospects of retirement of Dr. Rajendra Prasad from his office of Presidentship, as already reported in the press, seem to bring to an end the work of a team of leadership created by Gandhiji. Glorious as also memorable has been their part in the emancipation of the country and its consolidation after the attainment of independence. While there can be no two opinions regarding their unique contribution in the struggle and liberation of the country from centuries of foreign bondage, there is room for honest difference of opinion regarding their later contribution in giving honest and efficient administration to the country and developing the nation on sound and systematic basis. Innumerable crises and unwanted spirit of frustration that envelopes the country just at the moment are symptomatic of confused policies of the administration and the failure of the Congress leadership to evolve and execute right type of policies and to take wise and statesmen like decisions. A crisis of confidence in the capacity of the present Congress leadership in administration to lead the country to the goal of 'Welfare State' and 'National Prosperity' is the result of confused thinking and contradictory actions.

To regain freshness and creativeness of mind to be able to solve multitude moral, economic and administrative problems facing the country at his advanced age of about three score and ten does not appear to be sound commonsense even in the case of Shri Nehru. It is beyond one to recreate himself from a politician and propagandist into a constructive and creative administrator and statesman at such an advanced stage of one's life when the two patterns and frame of mind are diametrically opposite to each other.

The task that awaits the country requires change of leadership at the top. It should be essentially and temperamentally constructive and creative with the background and training of creative thought and action as part of their life, which psychological and mental equipment the present Congress leadership in power basically lacks. They could not be expected to bring about transformation in their psychological make up at this retiring stage of their life. The need of the hour is creative and constructive leadership in administration, which alone would be able to give sound and progressive administration and lead the country to the much desired goal of National Solidarity and Economic Prosperity.

RURAL SURVEY—ITS OBJECTS AND METHODS

By : **A. MAJUMDAR**

INTRODUCTION :

Let us begin with what do we actually mean by survey and then by rural survey. Literally what we mean by survey is inspection but in economical terminology we use the word survey for inquiry into somethings, condition or amount. There are various types of surveys, which can be classified differently according to their scope, object and method. Economic surveys may broadly be divided into rural and urban, though the line of division is always not clear and sharp. The technique of rural survey also do not fundamentally differ from that of other economic survey but it is applied to a particular group of people and particular set of problems which have distinctive character of their own. Thus rural survey occupies a jealous position within the survey both for its importance and complexity. The rural survey in its simplest form means the survey of rural area, to be more precise it means the inquiry or inspection of conditions of rural life-both social and economical in a particular area, region or country.

History :

If we trace back the history of survey perhaps it will lead us to that golden moment of the dawn of civilisation. The earliest surveys were those of travellers who recorded their impressions of journey in new lands. But these surveys mostly conform to our literal meaning of the word and suffer from several great drawbacks. First of which was that there was no pre-determined objective, secondly, they were just unsystematic observations of the facts as one saw during his journey, thirdly they had very weak scientific base. Thus now-a-days these observational studies do not come under the domain of economical survey as modern survey has got a very sound scientific foundation which rests on sciences like economics, sociology and statistics.

The economic surveys were first introduced in England and continental Europe, which were mostly limited in the urban sector. In the first decade of the century, Russia is the first to study the economic problems of farms on a large scale. During the same time, Prof. G. F. Warren of Cornell University, U. S. A , made similar attempt before the results of his systematic surveys were published in 1911. This work impressed the research workers and students of the subject in the U. S. A. and in other countries during the following years.

In India, it was not until late twenties of this century that serious attention was paid in this direction. The Punjab Board of Economic Enquiry (Lahore) was one of the pioneers in this field. Other notable contributions in this direction have been made by the Gokhale Institute of Economics and Politics, the Delhi School of Economics, Agro-Economic Research Centre, Visva-Bharati University, Indian Society of Agricultural Economics and Indian Statistical Institute. The Agricultural Economics Section of The Agriculture College, Kanpur, Banaras and Agra are also doing valuable work in this field.

An attempt of survey of rural surveys so far done in India reveals a great deal of diversification in the objectives and methodologies. The difference in objects and methods give rise to different types of rural surveys. The following are the important ones:

1. (a) General Survey :

A general survey is general in its nature and wide in the scope of the subject matter which seeks to obtain an exact knowledge of all the essential facts of the region and ranges over entire social and economical life of the rural people. As for example we can name "Rural Economy of India", by Dr. R. K. Mukherjee, "Economics of Rural Bengal" by Mr. Saha, "Rural Economy of Bombay Deccan" by Mr. Keatinge, and many others.

(b) Special Problem Survey :

Instead of being general, these surveys seeks to study particular problem of some selected aspects of rural life. Examples of this type of rural surveys are "Agricultural Marketing in India" by Mr. B. B. Mukherjee, "Land Problems of India" by Mr. R. K. Mukherjee, "Marketing of Jute in West Bengal" by Mr. A. Mujumdar, "The Co-operative Movement in the Punjab" by Mr. Atta Allah.

2. (a) Extensive Survey :

These surveys are extensive in their nature which give a broad view of the conditions prevailing in the rural area and the general tendencies operating in the region. Instances are Calverts' "Wealth and Welfare of the Punjab", Panandikars' "Wealth and welfare of Bengal", Mehtas' "Rural Economy of the Gujerat", etc.

(b) Intensive Survey :

These are exhaustive in their nature which seek a close and searching examination of the rural life with all their details and complexities. As for example "Agricultural Idleness in Banaras District (U. P.)" by Mr. A. Singh, "The Co-operative Movement in Bengal" by Mr. J. P. Neogi, etc.

3. (a) Census Survey

A census survey is of very exhaustive nature in respect to its universe of refernce and implies complete enumeration of every existing unit. The census method of survey is followed in the collection of our population statistics every ten years and is also adopted in the collection of our cattle and livestock statistics every five years.

(b) Sample Survey

A sample survey connotes the study of the universe on the basis of only a representative part of it. Agricultural Labour Inquiry by Govt. of India is an example of it.

The above classification of surveys is only intended to afford a convenient picture of their differing nature; the classes are by no means rigid or mutually exclusive.

Object :

The objectives of rural surveys are varied according to the need of individual or the authority for which the

survey is intended. Say for example if one likes to know the general condition of the village and rural life naturally his objective will be to explore all the aspects of the rural life. But if one likes to study only some particular problem say credit facilities of the region consequently his survey will be conducted on that line and cover only those aspects from which he will be able to get a comprehensive picture of the credit facilities of the region. Obviously, different objectives are chosen for different rural surveys to suit their special needs and conditions. From the above discussion it may reveal that the object of the rural survey is just only to seek how life lay in the village or what it is in the village. But rural survey is by no means an easy task as it attempts to study both the statics and dynamics of social and economical forces with its mutual actions and reactions to each other. Further, the close intermingling of social and economical forces render it difficult or even impossible to consider a problem as purely agricultural or purely economical or even purely social. Moreover, Indian rural life is an indestructible, indivisible whole whose economics cannot be artificially set apart and isolated. It is, therefore, necessary to study not only the face of economic problems but to secure rock bottom facts and to examine their roots in the social fabric of the rural society.

Rural survey is neither an end in itself nor it itself is the object or objective but the ultimate object is the evaluation of a Rural Plan. Thus the underlying object of a rural survey is the formulation of a right plan with a view to reconstruct and revitalise the rural area. The justification and significance of a rural survy, the aim and yield of a rural survey, the root and fruit of a rural survey should be a Rural Plan whose only aim must be rural welfare.

Thus now-a-days a revolutionary change has come in respect of the object of rural survey, and to-day it is not enough to study how life lay in the village and what it is in the village but what is needed to be found out in the words of Mr. Vaswani is "Why it was What it Was."

Therefore, our slogan should be "Not an exploratory, economic, actual and academic survey but an explanatory, socio-economic, sympathetic, diagnostic, reformative and reconstructive survey".

Method :

There is great deal of diversification in the method of rural survey like its object. The following is the common procedure in all the methods which are in use.

Selection of the area :

The area in which a survey is to be made depends on the particular purpose of the survey and possible co-operation from the villagers. If the object of the survey is to determine the relative profitableness between irrigated and dry farming, it will be necessary to choose an area where both irrigated and dry farming are practised side by side on similar type of land. Again if it is the desire of the research worker to study the advantages of improved cultivation of jute over the traditional one, firstly he has to select a region where jute is one of the major crops and then within that he has to select an area where both improved and traditional methods of cultivation of jute are followed. But if one likes to study the general condition of a region the co-operation of villagers is the first consideration which comes into play in the selection of the area.

Choice of the period :

Rural life and habits of living in India are not at all rigid, on the contrary, in fact they are very flexible. Indian villagers adapt themselves to changing condition in remarkable manner not only from year to year but also from season to season within a year. This fundamental fact of our rural life has got an important bearing on the technique of our rural survey. The survey should be executed in such a year which represents normal or average conditions in relation to the informations to be collected for the particular object of the survey. It has been experienced that sometime a one--year survey does not give true and representative picture of rural life and conditions and it is necessary to repeat a survey for a number of years in the same area to obtain reliable and accurate data.

Census or Sample :

The next step comes whether complete enumeration of all the existing units of the area i. e. census survey or surveying only some selected units of the area i. e. sample survey is to be undertaken. The census method of survey is a very costly affair and is considered as an expensive luxury for a country like India. Moreover, detailed complex enquiries covering a large number of persons will require a battalion of skilled personnel which is not easily available at the present stage. Now-a-days the sample method of survey has come to a great prominence due to its soundness of the mathematical arguments and the success of the experiments carried out by this method. But in certain cases it is necessary to make a detailed investigation in a large variety of economic and social problems as census of population or the census of production etc. In the sample method of survey the enquiry is confined to a smaller number of units in place of all existing units; consequently the number of investigators and other personnel required is also smaller which costs less and minimises the error due to personal bias and thus gives a more accurate picture.

Sampling is neither an easy task nor a very complicated one. It needs at least some understanding of the dimensions of the subject. It is also necessary to know that what types of sampling will solve the purpose for particular type of studies and what will be the significance of the results of study carried out under each of the alternative methods.

The method of selection of units are mainly of two broad types, non-random and random.

Non-random

This is often called as Deliberate. Purposive or Representative sampling, In this method the particular units are deliberately selected out of the huge mass on the basis that they will be typical or representative of the whole. Here there is a great chance for personal element to enter in the selection and thus to vitiate the entire enquiry. If the selection is unbiassed, the results obtained from the analysis of deliberately selected sample may be tolerably reliable, provided the basis of selection is unquestionable from other points of view.

Random

Random sampling is a matter of chance selection which is entirely free from the influence of personal bias. Random sampling is a scientific and mathematical concept and the method is based on the mathematical "Theory of Probability" which implies that if from a very large group of items (population) a moderately large number of items are selected at random, on the whole they are sure to possess the characteristics of the population. Here all the units of the

population have got equal chance of being included in the selection and it is only a question of blind chance alone that determines whether the one unit or the other is selected.

These two broad types can again be subdivided on the basis of the successive stages of selection. In cases where the population is not composed of homogenous units as is often the case – the population is divided into homogenous groups or strata and then the selection of units is made. This method can be used for both the purposive and random type of sampling. Thus we have now four different types of sampling on the basis that whether stratification is made before the selection of primary units or not. These four types are – Representative sampling, Stratified Representative sampling, Random sampling and Stratified Random sampling. We can also have a fifth type which is nothing but a combination of the representative and random type, often called as mixed type. The process of sampling may become very complicated in structure where stratification is to be made in more than one stage and even random selection of strata is to be practised. In those cases the process of sampling has to pass through a number of stages with randomization used in more than one stage and is commonly known as Multistage Sampling.

It is rather impossible to say digmatically which one of these methods is better than the others, because of the fact that much depends upon the object and nature of the study and the characteristics of the universe to be studied. There is a lot of controversy between Agricultural Economists and Statisticians about the justifiability of non-random and random sampling. At the present set of conditions it can be said in general that stratified random sampling or representative random sampling may prove better and yield satisfactory results, as rural surveys of our country have yet to reach that stage when we can call for representative or purposive sampling.

Size of sample :

At the first instance it is necessary to stress that no attempt should be made in any case to choose a larger .sample which may cross limit of the available resources. But at the same time it should also be noted that a sample of any size will not give exactly the same result as a study of the whole group would. As a matter of fact, the probability of error diminishes with the increase in the number of items included in the sample. Moreover, according to the Statistical Law of Inertia of Large Numbers–large numbers are relatively more stable than small ones which means the larger the sample, the more reliable are its results. Within these two completely opposite sets of conditions the size of the sample has to be judiciously determined.

Method of Study :

The next step is that in which line the method of study should proceed. There are various types of method of study, one of which is to be selected according to the object and nature of the particular study. The following are the common methods in use in our country.

1. Surveying :

It means the inspection of economic of social conditions of a particular area or locality which is conducted on systematic questioning and basing results on farmer's estimate. In this method the investigator makes ad hoc surveys and fills the questionnaire by means of interrogation. Here the investigator visits each family or farmer. twice or thrice a year and collects data relating

to the preceding six or four months as the case may be.

The survey method is comparatively cheap and can yield quick results from a large number of families or farms. But this method involves a large number of estimates which are likely to be less reliable.

This method is very suitable for general socio-economic surveys and extensive agro-economic surveys.

2. Cost Accounting :

It aims at examining an individual farm in as much detail as possible and involves the analysis of all direct and indirect expenses and their distribution as accurately as possible as to determine costs, returns and profits of each product. In this method the investigator visits the selected farmers once a day and notes down details of each operation, transaction and activity engaged in by the farmer during the day.

Accounting method is no doubt suitable for intensive studies and result is more reliable than that of the survey method, but the chief short-comings are that it is time-consuming and far more costly than the other method.

This method is only suitable for intensive agro-economic surveys and farm management studies.

It is clear now that in case of general socio-economic and farm-management studies the survey method is most suitable one but the controversy cripples in case of intensive agro-economic surveys and farm--management studies where both the methods can be applied. Some experts are of opinion that the survey method is more suitable in Indian conditions than the cost accounting one. The result of the "Studies in Economics" of farm management in West Bengal" has shown that the results of the two methods (the survey method and cost accounting method) are more or less similar. But still the question is, not out of criticism, as the Indian farming is carried on mostly by the illiterate and the farmers are still orthodox in furnishing answers about their home and business, in such a case it is a debatable point whether farmers are really able to answer the questions from their memory or they just answer it to get rid of the investigators. As a matter of fact under this set--up of conditions this point needs serious attention whether the survey method can yield reliable data or simply guesses or something between guess and estimate which has been fantastically termed by some one as " Guestimate".

Conclusion :

The economic survey can be divided into two broad types-urban and rural. The latter has got predominant importance in our country as it deals with 83% of our population. The surveys in broader sense are pretty old in origin but economic surveys on scientific line have come into being only half a century ago. In India it is of still recent origin. The object of the rural survey is to give a representative and true picture of the reality we seek to study and it is that conclusion drawn from the study which will be of value. After a lot of haphazard and unsystematic attempts it has been realised that our rural survey instead of being narrowly economic, strictly statistical, simply factual and exploratory should be socio-economic, sociological, explanatory and sympathetic. Further our rural survey should evolve a Rural Plan indicating the channels of reconstruction and agencies for reform to remake, to regenerate and to revitalise our rural area.

Selection of area and choice of period have to be determined judiciously

according to the particular object of the study. The census and sample method of survey are used depending on the need and suitability of the particular survey. Though there is lot of controversy between non-random and random method of sample survey, the random method is more suitable in our country at the present stage. More specifically the stratified random sampling and representative random sampling are expected to yield better results in comparison to other methods. The size of sample is determined keeping in mind that it should not cross the limit of the available resources on one hand and that it should consist of sufficient number on the other hand. The surveying and cost accounting method are practised according to the object and availability of resources of particular survey. But for intensive agro-economic survey and farm management studies, cost accounting is the method which can yield reliable data.

TRANSLATING THE BUDGET

By : S. **KRISHNA**

IN a frank talk before the public as well as on the floor of the House, while presenting a detailed analysis of the Budget for 1958–59, Mr. Nehru has given a clear indication of a 'no shift' in the financial policies initiated at the time when Mr. T. T. Krishnamachari was declared as the guardian of nation's purse. Much more that these policies will be vigorously pursued and carried forward is a qualifying clause. This in verbatim may be called the essence of the budget. It further substantiates the absence of reliefs, the grant of which may appear as a discardation of the new two–year old reins and their replacement by the old ones, in taming the horse that has done so much damage to the wheels of economic chariot.

With this begins a sad story of the new Budget. It is difficult, within the compass of this article to discuss each item--wise details of the budget save a few salient features.

The Gift Tax

Now in the nation's bowl is the gift tax which completes the radical reforms beginning with the levy of the capital gains tax in 1956. Incidentally, it is worth pointing out that the gift tax is not merely a check against the loop-holes in Estate duty through 'inter vivos' transfers as was once suggested, but a tax with a personality of its own. The reason for the lowering of the exemption limit for the estate duty is not within the reach of my understanding at least. However, it succeeds in one way that it does bring uniformity with undivided Hindu families and proves that the Government is yet of the opinion that a limit to the taxable capacity has not yet reached, though taxation in India is now considered to be the heaviest amid all the countries of the world.

This fortifies Mr. Nehru's anxiousness to reaffirm that there was no scurry or lack of consideration of the issues when the taxes were decided upon and levied last year and the emphasis that there will be no hurry in reversing the gear. This is, perhaps, because more than reasons of prestige there is an important question of finding a lid (by means of trial and error) that fits the expanding container.

To the utmost the private sector could have expected only a few gentle gestures

on matters which involve no sacrifice of revenue-abolition of the compulsory deposit scheme and of the tax on bonus issues have figured in the list of such hopes but it would be naive to believe that this concession would have lifted it from its present state of utter despondency.

While businessmen may derive whatever consolation they can from the absence of new excise duties or other fresh burdens they must not lose sight of the fact that the uncovered revenue deficit of the order of Rs. 27 crores might necessitate something more-a little after the bitter taste improves. This gap cannot remain unbridged and there are no possibilities of a virtual strangulation through reduction of non-development expenditure with the swelling of defence budget.

It is no wonder, therefore, that the Planning Commission's calculations of additional resources through Central taxation of Rs. 800 crores in the Plan turn away and this setback is far more serious and lamenting than that caused by the sudden imposition of tax burdens in May last.

Major Question

Now the question that crops up is whether the growth of the economy can afford this major diversion in current expenditure on defence and at the same time maintain investment at the required levels to fulfil the Plan.

The answer is to be found in a small bunch of pages known as 'Economic Survey for 1957-58' issued along with the budget. According to the Survey the national output is likely to be somewhat smaller in the current year as the rice crop in short and the rate of increase in industrial production has tended to slow down. The seasonal conditions would explain the decline in agriculture (the production index was at a peak at 123 in 1956-57—the rate of expansion of Indian industrial output which has maintained a steady annual rate of six to eight percent in the last five or six years has now come down to about four percent).

Can there be any reason to convince that it is only a temporary phase? Perhaps not. Even if it be admitted that this slackening trend was common to both producer and consumer goods, there is every likelihood that the latter group may show continued stagnation as has already become visible in the case of cloth, soap, matches and a few other commodities.

While on the one hand there is the belief that there cannot remain any deficient demand in view of the high order of developmental outlay, no satisfactory answer is offered as to why the production has levelled off at this particular time.

The Assumption

The assumption made in the survey that it may be "due to bottlenecks at particular points or temporary overstocking" is an admission of failure of proper assessment of facts and the prevailing economic situation. Taking it for granted, for a moment that there could not have been a deficiency in demand at a time of high deficit financing, why should not the Government find out why the expansion is limited or restricted for reasons one or another, be it inadequate installed capacity, insufficient supply of raw materials, import curbs, the credit or consumer resistance to higher prices caused by excise duty. It might be that the rising food prices restricted the effective purchasing power of the rising incomes.

Defeatist Attitude

Now to agree with the survey that the outlook for the year is not quite

reassuring is to admit the truth but in the manner of a defeatist. If the discouragement in the private sector is so strongly stamped, it would be facile to sugggest that inventions and exercises in the field of taxation would put an acid on this discouragement.

The easing of the monetary stringency is yet another indication of the absence of the presure of investment. It is not so much an achievement of the policy of selective credit control. This lower figure of credit expansion in the current busy season (Rs. 39 crores as compared to Rs. 66 crores in the previous period) particularly in the context of the condition prevailing since May last year, shows that there is dearth of profitable opportunities for funds. No wonder, therefore, that the capital issues have declined from Rs. 35 crores in 1956 to Rs. 27 crores.

Limiting Credit Squeezing

There is, therefore, the danger of an excessive credit squeeze as on opposite was the case with the unbridled and unlimited deficit financing. In this connection there is a curious reading in the survey, "The Plan requires all the resources that can be mobilised, there cannot in this situation be any general easing of credit restraint". Logically this proves that higher bank rate and the restriction on advances will continue, though at another place the survey foresees a fall in the private investment as a result of lack of funds in the capital market and paucity of foreign exchange.

Perhaps the official complacency on this score is due to the false thinking that if the aggregated investment is kept upward through the increasing outlay of the private sector, the recessionary signal in the private sector, which is currently providing the cushion against inflation and helping to maintain the average annual rate of increase to the gross national product would not matter.

Contradictions

The economic policy is full of contradictions and the advantages of one economic measure are offset by the launching of another. Hitherto utilisation of sterling balances in the form of import finance provided the necessary 'Dunlopillo' on the otherwise barren bed baked with the heat of inflation. Now all the time the former measure can no longer administer relief injections.

The risks are greater and will only be heightened if the domestic output also falls or remains stationary. There is a sense of diffidence in the Planners' minds in assuming that 'the private investment hereafter will depend mainly upon the availability of foreign investment or satisfactory deferred payment terms' and that with present adjustment the growth of potential of the economy will be safeguarded.

This is the sad story of the budget. It must be realised that there is certainly a case for controlling the burden of indirect taxation beyond a certain point. An understanding of this fact can be arrived at if the case is based on the point that heavy taxation on items of consumption would sooner or later arrest the expansion of production and thereby throw the nation's economic wheel into a ditch from which it will be difficult to lift the wheel without the help of an 'industrial crane.' We well know where the crane is.

AN APPROACH TO UNDER-DEVELOPED ECONOMY WITH SPECIAL REFERENCE TO INDIA

By: **SHYAM MANOHER GUPTA**

LORD Keynes made large and lasting contribution to Economic science. Keynes devoted his entire attention to the equilibrium of investment and saving. Full employment can be secured when the aggregate savings become equal to aggregate investments. Any sort of disequilibrium between these two factors, disturbs the economy of an advanced country. In an under-developed economy, it is not the disequilibrium of investment and saving that matters, but something else.

Under-developed economy necessarily means the low productivity. The problem in this economy is one of under-utilisation of potential resources. This is all due to lack of capital and capital formation. Capital formation means an act of saving on the part of the community. The community has a small capacity to save which results from low level of income and low productivity or under-utilisation of resources. The resources are not directed to produce capital goods. Capital goods industries require heavy investment of capital while the capital resources of the under-developed economy are tapped.. The available resources men and material concentrate mainly on consumption trade, which does not leave any surplus for capital formation in the country. In short, inadequate saving is the crux of all problems in this country.

Saving in India is practically non-existent. Though accurate figures are lacking but it is admitted on all hands that India could save 7% of the National Income in the year 1955-56. Standard of living in India is low and poor. Any attempt therefore, to increase their real income is bound to fail because increased income is necessarily utilised for increased expenditure. Low income group has the accent for the pattern set by the higher income group and this group develops the taste for better and higher standard of living.

Lower investment due to lack of capital formation and dearth of complementary resources account for a low volume of employment in this economy. Disguised unemployment or under employment of labour is the characteristic of under-developed economy. According to Dr. V. K. R. V. Rao "Disguised employment occurs when there are workers who are constantly employed but whose contribution to output is nil in the sense that their ceasing to work will leave the total output unchanged. The problem of unemployment in an advanced country is the outcome of the shortage or the "Effective Demand". If public investment and consumption expenditure of the community is stimulated effective demand will be raised and therefore full employment is achieved. The problem in under-developed economy is not one of shortage of demand but of under employment of potential resources men and material.

There are ample resources in India but shortage of capital is the only handicap in the rapid economic development of the country. Capital formation is lacking. The first and the Second Five-Year Plans promise the creation of employment opportunities and raising the productivity of labour.

Savings have to be encouraged so that additional increase will not go in wrong

channels. People should be encouraged to save more and consume less in the interest of the nation. The additional saving resulting in this way should be directed to fill the gap in the financial resources of the plan and the conflict, if any, may be avoided so that the plan is not upset.

The economy of under-developed country is mainly Agricultural and rural in nature. It is due to this nature of the economy that the country is backward. The economic treatment generally accorded in advanced economies to agriculture cannot be attempted without modification in an under-developed country. This economy is poor to the application of modern measures of production. Small per capita cultivated land area adds to the severity of the problem.

India also accords a disproportionate weightage for agriculture. It suffers from poor and stagnant techniques. People here do not respond to modern technological opportunities because of their social, institutional and economic resistence to change the orthodox techniques. The growth of production is retarded by outmoded techniques of production and increasing population. Threfore whatever is produced is only sufficient to meet their necessaries and practically there is nothing left for saving and capital formation. It is because of this fact that rate of economic growth is very slow in India.

Large population accounts for the economic backwardness of under-developed economy. Large population checks the progress and therefore economic changes are not as rapid as are evident in advanced countries. Nearly 70% of the population outside the Soviet orbit live in under-developed areas comprising of South and Central America, Asia and Africa. The United States, U. S. S. R., China and India have ample employable resources of men and material, but China and India are in the making. Scope for development exists in the fields of production. Employment and national income lay at low level at present. During the last few years population of India has increased to an alarming level. Increased national income, if any, is absorbed by increased population. To absorb total working population of India coming on age, an investment of Rs. 2500 crores per year is needed i. e. 25% of our national income. Economic investment which is essential to maintain the existing standard for a growing population is lacking in India. There is strong preference for investment in gold, real estate and trade to the detriment of more productive alternatives available in industry and agriculture.

The deficiency of appropriate financial institutions constitutes a serious handicap to capital formation. Inadequate banking system, lack of means of transport and communication retard the progress of the under-developed economy.

Stagnation at a low level of economic well being in India is due to unorganised capital markets, money markets and banking institutions. Rural savings have no part to play in the nation building activities because saving institutions in the villages are practically non-existent. Serious inequalities of income in India are the main obstacle to economic growth.

Under-developed economy generally suffers from orthodox traditions, inelesticities and immobilities of factors of production, sentimental policy accounts for the under-developed nature of the economy. The community recognises capital as source of private profit rather than a means of public utility. Lack of sensitiveness to the economic calculations in the community attributes the main cause of low standard of living in the country.

Keynesian approach to full employment does not therefore apply to under-developed economy. This economy requires different approach to the problems confronting it. The problem here is the excessive propensity to consume low aggregate income. Stimulation of private and public corporate savings, control of consumption, non-priority investment are some of the means to encourage saving.

Apart from Keynesion approach there are other suitable approaches to this economy. There should be declared objectives on which the rate of economic growth will depend. India has already declared the Socialistic Pattern of Society and this objective is the guiding path of economic development. There is a well defined private and public sector and each of these are supplied with moral codes to conduct the affairs. Full employment analysis in under-developed country cannot in itself solve the economic problem of low national income. It is only through additional investment, proper set up of the financial institutions, and increased means of transport and communication, that this economy can grow economically. Labour intensive techniques for the supply of consumption goods and capital intensive with high capital output ratio for capital goods are the two lines on which the investment should take place. The problem of consumption and employment ought to be solved by the Village Industries. Planning in this direction is the best form of economic policy which can secure a higher pattern of life and work balancing economic and sociological objectives. Much depends on the success of stepping up the rate of investment which in its own turn depends on the monetary and fiscal policies of the Government of the country.

THE OTHER SIDE OF BIG PROJECTS

By: **NAUTAMLAL C. TEJPAL**

THE greatest curse for India is tremendous soil-erosion which is going on unchecked for centuries. If this is not checked at any cost, we shall never achieve self-sufficiency in food even with the help of expensive irrigation schemes.

We all know that our sea ports and our lakes are receiving mud and silt with the rain water and are almost choked in a few years. Now if our river valley projects become the accumulating places of mud and silt and when the river bunds are filled with mud after a few decades, it will bring new problem to solve. The rivers may change their course or expensive bunds may hold no water, since the same may be filled with the silt.

This is not a new opinion of mine, but the report of the greatest expert Engineers of America has pointed out that the huge project of the Tennesse Valley will be a major headache after a generation or two, since the valley is accumulating silt year by year by millions of tons. I came across this report in the American magazine 'Look' in 1944. I wrote an article in the columns of the Free Press Journal of Bombay, published on 23rd June 1945, showing the other side of the imposing scheme of T. V. A.

America, a rich country, can afford such expensive experiments. But we must think twice before embarking on such schemes.

In most parts of India, the annual rainfall is less then 25 inches. In places where it is less than 15 inches, the rain water should be accumulated when it falls by bunding the fields and digging trenches on the extremities of the fields, and by creating miniature tanks or lakes where it is possible. We have such lakes around Mysore State, which were constructed with human labour centuries ago. They are still there, the proof of the practical mind of the ancient people of India.

This system should be copied all over India where rain-fall is less than 15 inches per annum. Not a drop of water should be allowed to go waste into the sea. These lakes not only supply the water for irrigation during the dry season, but the silt which is deposited at the bottom, is removed by the farmers to enrich their soils. Since this is the best manure, these lakes are miniature fertiliser factories near every town and village. And soil-erosion is no curse, if this plan is carried out. The tractor and other modern mechanical impliments should be utilized for these trenches, bunds and small lakes. The expense will be less than the huge river schemes and it will be far safer for the nation.

Where the rain-fall is higher than 15 inches, big afforestation schemes should be carried out. The best and the cheapest way of stopping the soil erosion is more wood-lands and grass lands in areas where the rain is heavy.

Tidal Forests

Extensive afforestation of all the coastal fringes should be started by planting of those species of trees that could grow into the saline soil of our littoral regions which would be full of massive trees of the tidal forest flourishing in the tidal waters only.

Following are the Species of the trees absolutely suited to our littoral regions. Each series of these species has been tried and is forming on different parts of the globe as the tidal forest, most suitably grown in the saline soil.

Rhizophoraceae—The littoral species known as the mangrove make up a curious forest known as the mangrow swamp.

Throughout the tropics, in littoral regions, away from the sandy or rocky shores exposed to heavy full force of wind and rain, this mangrow swamp is found in Creeks and Lagnona in muddy low lying belts, where the tidal and wave agencies are not so strong.

Best mangrove forests of distinguishable forms are :—

(I) The eastern of the globe : East Africa, Asia and Polynession islands down to Australia and, (2) The Western area comprising of America and West Africa. Most extensive and highly developed Mangrove forests are in Malayan regions and Boreno.

In the Indo-Burman region mangrove forests are distributed to the Indus delta of the Sindh, Peninsular regions of Travancore down from Sunderbans to Chittagong, Arakan, Burma, and all along the coast of Andamans.

Mangrove swamps are formed on the silt which is washed out by the rivers and creeks and which is subject to occcasional erosion gradually spreading towards the sea. The Mangrove, spreading with it and helping by means of its growth and mass of its roots hold up the soil and form new lands. As the silt accumulates the land gradually rises and becomes dry and entirely new formation replaces the mangrove. This formation occurs on land which is inundated only by spring tides and is commonly known as the tidal

forests. The habitate of the mangrove is a swampy soil impregnated with salt.

Artificial reproduction of the mangrove is a simple matter. The embryos being collected off the ground after felling and struck vertically in mud. In the Andamans, the plantation of the mangrove was started in 1893 and until 1900 extended upto 685 acres. The cost of the creation being Rs. 5368/- slightly more than Rs. 8/- per acre. The plantation was too thick. In the Andamans it has attained the height of thirty to thirty five feet and girth to twelve feet within fifteen years. Sample plots in the Arakans gave an average yield per acre three tons of bark and twenty five tons of wood in clear felled coupes. It gives a good fuel and bark is used for tanning. Thus our charcoal difficulty would be solved and the bark would give a good revenue either in its export or its use in industries of tannery.

Phoenix Paludosa

A densely tufted Palm with slender stems six to twelve feet in height form an impenetrable thicket in the tidal forests of Bengal, Andamans and Burma. The leaves are used for thatching, smaller stems for walking sticks and larger ones for rafters. The date palm is indigeneous to Massopotamia and Casis of the Sahara desert. It thrives in arid climate in very great heat. The Arab proverb says "the date palm, the queen of trees, must have her feet in running water and its head in burning sky".

Cocos of the Group Nipa

A gregarious palm with numerous large pimate leaves 15 to 30 feet long arising in tufts form a stout rihzome. This palm is a very characteristic species along tidal estuary and creeks in Sundarbans and coast of Chittagong, Burma, the Andamans, the Malayan peninsula and south coast of Queensland and the Phillippines. Leaves are extensively used for the thatch and leaf stocks are used as fishing boats.

It is very plentiful both in the mangrove swamp and dry forests behind it.

FARM EFFICENCY

By: **A. N. SHARMA**

The Idea of Efficiency

The idea of efficiency is most rigidly defined in the field of mechanics where it is used to describe the ratio of useful work or effect produced to energy expended in producing it. With some modification, the same idea may be carried over to economics and business. In other words we can say that it is the relation of output complex of labour, equipment, and the like that we refer to as the efficiency ratio. And greater output per unit of input is another way of saying increasing efficiency. When we refer to increased production being obtained by greater economy in the use of productive agents, we simply mean more units of output for a given use of labour, capital, equipment, managerial talent and other factors.

Kind of Efficiency

Sargant Florence, prefers to distinguish three different kinds of efficiency.[1]

(i) Monetary : money returns-costs or business profit.

(ii) Physical : volume of goods and services of given quality obtained for given quantity of material, equipment and workers, etc.

1. Florence P. Sargant : The logic of Industrial organization.

(iii) Psychological: utility and satisfaction produced by given effort and sacrifice.

The idea for rate of operation should be borne in mind while calculating efficiency by taking into regard capital input. By labour input we generally understand the man hours actually spent on the job. This again raises the question of measuring the time when labour was combined with other input items. This again, raises the question of capital input on the use of labour. How much of machine is used up in producing a particular output? Wear and tear are the basis for this, but the methods adopted are not reliable, or they are arbitrary.

In this way there becomes two kinds of labour-labour assembled and labour actual. On this ground we can say that there are two different bases for measuring productive effciency-the relation of output to actual input and relation of output to assembled input. Before measuring the efficiency we should see the conditions effecting it.

Conditions of efficiency :—

The conditions affecting the *efficiency of agricultural* industry are basically the same as are affecting the individual farm. But there becomes a great difference when we think of industry as there is less effect of natural hazards on them because their work is done in rooms while agriculture is open for all.

According to Earl. O. Heady the conditions are as follows :[2]

1. Resources must be allocated within each farm in a manner so that the marginal value of productivities of the resource services are equal : a unit of labour or capital should not be used for corn if it can produce a greater value product in wheat.

2. Resources must be distributed between farm so that marginal value productivities are equal.

3. Resources must be distributed between producing and farming areas to allow attainment of equal value productivity.

4. The various factors must be allocated between industries to bring about attainment of these identical conditions.

5. Resources must be allocated overtime such that their discounted value products are equal.

Having seen the conditions we now proceed to measures of efficiency. We should select only that measure which gives full attention on most of them.

Measurements of productive efficiency.[3]

After seeing the conditions we come to the point of measuring efficiency? It is very easy to think of productive efficiency as the ratio of physical output to physical input but very difficult to arrive at the actual measures which are generally satisfactory particularly on the input side.

(i) **Man-hour**: In nearly all studies bearing on physical productivity, output per man-hour or per wage earner has been the key measure of efficiency. But its wide use is not to be interpreted to mean that it is generally accepted as a completely satisfactory yard-stick. It is an incomplete measure of even labour

2. Economics of Agricultural Production And Resource use. Earl. O. Heady p. 708.

3. The Ministry of Agriculture, Fisheries and Food (London) has stated the following measures of farm efficiency (The Farm as a business p. 20, published by Her Majesty's stationary office).

1. Net Farm Income.
2. Intensity of Farming.
3. Economic yield.
4. Relation between finest and veriable costs.
5. Ratio of output to costs.
6. Cropping efficiency.
7. Performance of livestock enterprise.
8. Labour efficiency.
9. Use of Capital.

input taking no account of supervisory labour. This is more prominent in industries than in agriculture as it does not take any account for supervisory labour or labour which builds the machine or factory in which it operated. Another critic calls the man-hour ratio 'misleading' because it fails to include the input of other elements of production like equipment.[4]

It would certainly be absurd to conclude that there would have been no increase in productive efficiency if some method of reducing fuel consumption by half and still producing in the same man-hours the same output as before. The above conclusion must be borne in mind while measuring general efficiency of a factory. Fabricant refers to the ratio of output to factory man-hours as the simplest and most readily computed single index of all the changes, large and small, that have shaped contemporary manufacturing process.[5]

(ii) **Labour time actual and embodied** :—Leaving aside the question of man-hours there is another idea that total input can be expressed in terms of labour time, including both actual and embodied labour. By embodied is meant that which is represented in the material and machine etc. One of the first difficulty which impresses on the reviving of the estimates of embodied labour time is the necessity of first finding out the rates of output per unit of labour in the supplying industries like farming, coal, etc. But a series of hitches occur on estimating how much machinery and building were consumed.

Depreciation charges had to be discarded as a basis estimating capital consumption because they bore "more relation to taxes and financial conditions...... than to the actual wear and tear of the machinery and implement".[6] In agriculture this problem becomes more complicated.

Let us suppose that above difficulties have been solved. Can the total output be completely expressed in labour terms? No. Can the producer efficiency be fully measured by the ratio of physical output to labour effort put forth, including the sum of actual and embodied labour? Prof. Bye indentifies the basic elements of production as :[7]

(1) Effort (2) Ability (3) Saving (4) Land space (5) Natural materials, and (6) Risk bearing. Of these six elements it is obvious that man-hours can be used to measure only the expenditure of 'Effort' and 'Ability' and even this will be subject to some criticism unless it is accompanied with the acknowledgement that man-hours are only a rough measure of these elements, since they do not register variation in the degree of effort and grade of ability spent. It does not mean that the rest four elements are not essential to mechanised production. They can be said non-essential in a condition when they are in abundance. But they are so scarce that increasing level of consumption will be possible under any economic system only as ways and means are learnt of securing greater utilities from a given unit of natural resources.

(iii) **Costs at constant prices** :—There is another view for measuring the input factors and that is of cost at constant prices. Money costs are the only units

4. Cost behaviour and price policy—The committee on Price Determination for the conference on price research (cit. H. S. Davis)

5. H. S. Davis : The industrial study of Economic Progress p. 17.

6. H. S. Davis : Industrial study of Economic Progress P. 18. Philadelphia, university of Pensylavania Press.

7. Prof. Bye : Principles of Economics, A Restatement p. 331

which can combine into unit of productive factor. Labour hours and costs and of other input factors can be amalgamated only through costs.

An English research workers G. T. Jones has actually employed a "cost method for studying efficiency."[8] The ordinary cost measure charges in the price of various input items as much as they indicate charges in physical quantities entering the production process. Now the question is how the prices should be adjusted. For this ordinary cost of business operation should be adjusted to the prices prevailing in some particular 'base period' and by this process the money costs are converted to a series called real costs which it is hoped reflect changes in total physical input.

Cost at constant prices as compared with labour time.

There is not much difference between the view points of those who want to measure or express all input factors in terms of labour and of those who want to express all input factors through costs. The underlying idea is that there should be some way of expressing all input items in one common physical unit free from pecuniary influences. Cost at constant prices method is more durable and suitable at least in theory. By this method we can comprehend such diverse input elements as efforts and saving in the same input aggregate. But there remains a suspicion that any constant cost has been either over or under adjusted for price.

Profit is the backbone on which efficiency, at least in business is measured. This is the relation of money income to mony expenditure. E. O. Heady says "when a farm is analyzed as a pure firm, profit minimization becomes the sole end of production organization and, conceptually, the optimum use of resources is denoted by relating the choice of indicator to the production possibilities of the farm. Choice indicators are given in the form of price relationship."[9] No doubt such a measure has many advantages.

The idea that all input factors can be accounted in one total does not show its completeness, but this is the only method which is widely used and readily available. But its incompleteness is clear from the following example :

Suppose by rearrangement of implement or any machine productivity has increased, or more work has been completed within the same number of workers. No doubt such an increase would be an increase in productive efficiency. But the profits may remain the same because the price of material went up, competition forced a reduction in selling prices. By the above reason our thinking is shifted from the question how much output is secured for a given consumption of input factors, to the question of how much has to be paid for these factors in order to consume them.

Difficulties in the method of 'Cost at constant Prices'.

In order to arrive at total input costs at constant prices, one ought to have data on the money cost of each separate input item and the corresponding unit price. Moreover, such data would need to be in terms of very detailed input classification, for only then could money costs be adjusted by appropriate price series. Such adjustment always leads to two dangers :

1. Under correction for price changes on the one hand, and
2. Over correction, on the other.

8. G. T. Jones. Increasing Return pp. 4–6

9. Economics of Agricultural Production And Resource use by Earl. O. Heady. p. 705

It is difficult to arrive at the full price by which the money cost of a particular input item is to be adjusted. Market quotations, going rates and the like will not always suffice because they are not inclusive enough. Wage rates, e. g., are not usually expressed so as to include the employers or farmers' contribution for social security, or to reflect paid vacations. Failure to adjust on the basis of the full price will tend to over state actual input used and, therefore the given input.

These difficulties which effect the application and interpretation of cost at constant prices as a measure of productive efficiency, are believed to indicate the need for more work in refining this yard-stick rather than its rejection for purpose of studying efficiency. Certainly these problems do not appear to be of sufficient magnitude to offset the great advantage of one common denominator for many different input items which costs at constant prices so conveniently provide.

A. Multiple Ratio

Now the question arises, whether one single ratio, even though expressing diverse input into in a common unit, is necessarily the only useful method for studying productive efficiency. Suppose the output is related to several different input items with each unit expressed in its own appropriate unit. Then a series of ratios would be used to indicate changes in efficiency such as output to man hour, output to energy consumed, output to machine and implements, etc.

This supposition immediately raises the question of how one can establish what is happening to efficiency from a group of ratios. This method of multiple ratio requires care against interpreting them as measuring the efficiency of particular factors. A ratio of output to a single input item is a reflection not only of the efficiency with which that input is being used but also of the extent to which it is being displaced by other input factors, and of the efficiency of whole combination. Because any single ratio is such a composite reflection, it is a measure of changing requirement for the factor in question.

By combining and computing separate ratios for each of the significant input item, one should be able to judge whether as a whole the trend is towards increased efficiency in the sense of greater output for a smaller total input of productive measures. But there are difficulties in measuring the different factors in order to calculate the efficiency ratios separately.

B. Definition of input factors

(1) **Labour input**:—Before it is defined what labour input mean it is necessary to think of the difference between hours actually worked and hours available for work. There are certain points on which question can be raised. The first thing is that in which category the time which is spent in travelling or in going from field to field is to be put, in case there is no work on a farm and labour is there to work. There are certain ideas that the time for which employer pays should be included as used time. The above examples do not show the available but unused time.

The question of distinguishing between labour and management has got very little importance because the unit of cultivation is too small and the cultivators are themselves supervisors. So in agriculture we cannot regard supervision as a separate factor for production.

(ii) **Management**:—This term is most important in industries and not so much in agriculture. In agriculture, there is no need of measuring management input except on Government and mechanised farms.

(iii) **Capital input**:—Fresher in his review of economic concepts concluded that the various meaning of capital could be put into three main classes. [10]

(a) Productive equipment.

(b) Purchasing power and control over resources, and

(c) Claims to, or expectation of that kind of income which goes by the name of interest.

Frasher has further pointed out the capital goal or capital equipment necessary for production could be interpreted to mean not only plants, tools and machines but also stock of material and fuel and even the skill and experience of labour management. But this wide classification would make for mis-understanding. For the purpose of productivity measurement capital should be regarded as consisting of plants, tools, and machines or what is described as fixed assets.

C. Output measurement

The input factors alone do not create difficulties in the measurement of productive efficiency but output factors also create difficulty. Output too, needs to be expressed in a common unit, one which is free from variations in quality. Rupee value can be used as a common denominator for quality and for different kinds of products that have to be included in the same output figure. But this requires some methods for charging price.

Suggestion and Conclusion

In suggesting one particular method of measuring of efficiency in industries or in agriculture, we should judge before hand the nature and the factors affecting industries. As we have discussed the three measures of measuring the efficiency, the cost at the constant prices is the most suitable one because :

1. It is easy to change the input and output factors in money costs while it is difficult to interprete these factors in labour unit. The man hour measure is basically defective because it has no account for supervisory labour. Though it is easy and simple to calculate but easiness and simplicity is not the only criteria for it.

2. Heady's conditions of measuring efficiency are mostly fulfilled by this method i. e. it gives full attention to resources in their allocation, distribution and the compensation for the overtime etc.

3. It encourages for further research i. e. efficiency can only be calculated by this method when we have full information regarding it (industry) e.g. back days prices of the commodities, the condition of the market at that time, the man should be fully aware of the fact when he takes a 'base period' the prices at that time should not be abnormal.

4. The difficulties discussed before hand are of temporary phase and can be covered by giving full and mindful attention when doing calculation. It is a fact that it involves greater degree of calculation than the other measures.

When we come to Indian Economy the above method is not of so much importance as it is in other countries due to unavailability of sufficient data. And also we are over-populated i.e. among all the input factors as land, labour, capital etc. the land is the most important one. Labour is abundant, the factor capital is also not of great importance as that of land. The measure 'intensity of farming' should be adopted. That farm or the farmer should be called efficient which produces more produce per acre or greater produce on lesser area.

Considering this fact the Govt. of India has started the crop competition

10. H. S. Davis. Industrial study of progress, p. 31.

and the certificate and cash is given only to one who produces highest per acre. It will be clear when we take an example. There are two farmers one produces 10 mds. of wheat per acre at the cost of Rs. 100/–, there is another who produces 12 mds. of wheat per acre for Rs. 144/–. The latter farmer will be awarded prize though his cost of production is Rs. 12/– per md. while the cost for the former is only Rs. 10/– per md.

The basic idea lying behind it is that the Govt. is encouraging intensive farming i. e. more production on lesser land. Therefore, the best measure for measuring efficiency (now-a-days) is 'intensity of farming'.

HOLDINGS IN INDIA

By: **Prof: C. B. MAMORIA**

INTRODUCTION:

India is par excellence a land of small peasants. The unit of holdings is everywhere small and uneconomic. An agricultural holding usually consists of 5 to 8 strips of land scattered over a wide area. In many parts of the country, for instance, "toy holdings" a "miniature farms" of 1/160 acre or 31¼ sq. yards are not uncommon. In India the problem presents two distinct features. The first is that the holdings tend to be very small; and the second is that individual holdings tend to become broken up into a number of separate plots, often situated at a considerable distance from each other. The former tendency is designated as "subdivision of holdings" and the latter as "fragmentation of holdings." These tendencies have reached an intolerable point in the Konkan, Gujrat, West Deccan, Indo-Gangetic plain and other parts of the land. Fields measuring less than half an acre are to be found subdivided into more than 20 separately owned plots, many of them of less than 1/8 of an acre.

Size of holdings in India?

Various surveys undertaken in the country show that the average size of holdings is very small in India. It was particularly brought out by the Agricultural Labour Enquiry Commitee Report that the average size of holdings in India is only 7.5 acres. The average size of holdings vary from 5.3 acres in Assam, to 4.1 in Bihar, 9.7 in Bombay, 13.9 in M. P., 4.5 in Madras, 5.6 in Orissa, 11.8 in the Punjab, 5.3 in U. P., 4.7 in West Bengal, 14.1 in Hyderabad, 12.7 in M. B., 7.2 in Mysore, 15.4 in Pepsu. 16.9 in Rajasthan, 29.6 in Saurastra, 2.4 in Travancore-Cochin, and 3.8 in Jammu and Kashmir.[1]

It may here be pointed out that the preponderance of uneconomic holdings is not peculiar to India alone, e. g., in Japan also the small holder predominates —the average size being only 3 acres. There are nearly two million holders of less than 1¼ acres and another about two million acres between 1¼ and 2½ acres.[2] In China also large number of holdings are uneconomic. In the Balkans the problem is similar. For Instance, in a village in south-eastern Bulgaria the nature of agriculture holdings is that 12.5% are below 2 hectares; 42.5% are

1. Agricultural Labour Enquiry Committee-Report on Intensive Survey of Agricultural Labour, Vol. I.

2. World Agriculture, p. 58

below 5 hectares; 11.5% are between 7½ and 10 hectares; and only 10% are above 10 hectares.[3] But the table turns when we compare our condition with the advanced countries of the West. The size of our holdings pale into insignificance when we compare with the average size of holdings in those countries. In U. S. A, the average size of holdings is 145 acres, in Denmark it is 40 acres, in Holland 26 acres, in Sweden 25 acres, in Germany 21 5 acres, in France 20.5 acres, in Britain 20 acres and in Belgium 14.5 acres respectively.[4]

The following table gives the distribution of holdings in size in different States :[5]

States	Less than 5 Area owned	Less than 5 Area under personal cultivation	5 to 10 Area owned	5 to 10 acres A. P. C.	10 to 15 Area owned	10 to 15 acres A. P. C.
	%	%	%	%	%	%
Andhra	66.8	67.3	16.0	15.9	6.7	6.7
Bombay	51.3	51.0	20.2	20.2	10.2	10.3
M. P.	59.4	60 7	18.9	18.5	8.4	8.2
Madras	67.6	68.4	17.4	17.2	6.5	6.4
Hyderabad	32.0	33.8	21.3	21.1	13 8	13.5
M. B.	45.6	46.4	22.6	22.7	12.1	12.0
Saurastra	9.9	9.8	13.4	13.4	13.4	13.4
Ajmer	70.3	70.9	16.2	16 4	6.3	6.4
Bhopal	31.7	31.9	18.7	19.8	13.8	13.8
Kutch	20.5	30.8	21.7	20.8	12.8	13.4
Rajasthan	51.4	52.5	20.9	21.5	10.1	10.0
Travancore-Cochin	94.9	—	3.5	—	1.3	—

It will be observed from the above table that except Saurastra, Kutch and Bhopal, and Hyderabad, the unit of holdings below 5 acres are over 45 percent of the total holdings.

The Progress of Subdivision

The progress of subdivision of holdings has been going on unmitigated for long in nearly all parts of India, as has been revealed by a number of personal enquiries. E. g., According to H. Mann in Jategaon Badruk, the average holding was 40 acres in 1871, it was 14 acres between 1820-40 and only 7 acres by 1914-55 ...... He further says that in the last 60 or 70 years the character of land has changed. In the pre-British days and in the days of the British rule, the holdings were usually more than 9 or 10 acres, while the holdings below 2 acres were hardly known. Now the number of holdings is more than double, and 81 percent of the holdings are under 10 acres, and 60% are less than five acres.[6] In Borsad Taluka, according to Shri A. D. Patel, within 20 years the total number of holdings increased by 79% but while the average holding was 7 acres in 1901, it was reduced to 3.8 acres in 1921.[7] Dr. Bhagat says that in the Bhiwandi Taluka, the percentage of holdings below 5 acres increased from 49.7 in 1886 to 69.1 in 1937, while holdings from 5 to 25, decreased from 40.5 to 25.5 percent during the same period.[8]

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3. Wearinor : Economics of Peasant Farming, p. 6.
4. Government of India : Agriculture in Bried, 1956, p. 71.
5. Second Five-Year Plan, 1956, p. 213-220.
6. H. Mann : Land and Labour in a Deccan Village, Vol. I. p. 46
7. A. D. Patel : Indian Agricultural Economics, 1937, p. 124 and 171.
8. M. G. Bhagat : The Farmer, Wealth and Welfare, p. 93.

In South India, in Vadamalaipuram, according to M/S Thomas and Ramkrishanan, with a reduction in total area there has been a simultaneous increase in the number of holdings since 1916. The average holding is just half in size of what it was in 1916. ... The subdivision has gone farthest in the smaller holdings of one to ten acres.[9] Similarly in the Gangaikondan village, there has been a reduction in the number of land holders, from 925 to 833 between 1916 and 1937.[10]

Of Bengal, the Floud Commission remarked that the percentage of families holding two acres or less is 41. 9 and the percentage holding between 2 and 4 acres is 20.6 percent.[11]

The Punjab Board of Economic Enquiry showed that the number of holdings below 3 acres increased from 43.4 percent of the total holdings in 1928 to 48.8 percent in 1939.[12]

In U. P. the figures calculated by Major Erskine in 1880, the U. P. Banking Enquiry Committee in 1929, and those arrived at by the U. P. Zamindari Abotion Committee in 1949 show that the process of diminution of the size of the average holding has been steadily growing.

Thus almost all enquiries indicate that the process of diminution of the size of average holdings is growing at a rapid pace practically throughout the whole country. According the Famine Enquiry Commitee this trend is present in almost all the States in varying degrees practically throughout the country.

9. Thomas and Ramkrishnanan : Some South Indian Villages-A Resurvey p. 9

10. Ibid, p. 71-72

11. Report of the Bengal Land Revenue Commission, Vol. I. p. 86 and Vol. II. p. 30

12. Report of the Famine Enquiry Commission, 1945, p. 256

Fragmentation of Holdings

The problem of uneconomic holdings is further complicated by the practice of fragmentation of holdings. Thus if a father had four sons and he dies leaving four isolated fields of one acre each, the sons will not take one field each but one-fourth of each field, so that each field will be divided into four equal parts. This happens specially when lands are of different qualities and are situated in different localities. Fragmentation is accentuated by the expansion of cultivation irregularly over the waste, by purchase and sales and by extinction of families in default of direct heirs and the division of their property amongst a large number of distant relatives.[13]

As a result of fragmentation, the holdings of an agriculturist do not consist of a single compact block of land but of a number of small scattered plots over different parts of the village, often of a very irregular shape. E. g. according to Dr. Mukerjee, a holding of 9 bighas and 2 biswas was divided into 11 plots in Mahera village. Another holding with an area of 33 bighas and 14 biswas was divided into 25 plots; a holding of 4 bighas 6 biswas into 10 plots, a holding of 4 bighas 5 biswas into 10 plots and another of 8 bighas 19 biswas into 16 plots and so on.[14] In Nonapur village, the total holding of 0.18 acres was divided into three plots of 0.6 acres each, and these plots were further subdivided into smaller plots of land.[15] In Chach, "land is often divided into strips which are sometimes half a mile long and only twenty or thirty yards wide and each strip has a large number of holders."[16]

13. Royal Commission Report on Agriculture.

14. R. K. Mukerji : Fields and Farmers of Oudh.

15. U. P. Zamindari Abolition Committee's Report, p. 17

16. M. Darling : Punjab Peasant in Prosperity and debt, p. 84.

In the district of Dacca, the average size of plots is 0.55 acres, varying from 0.36 acre in the Thana of Harirampur to 0.19 acre in Kapasia Thana.[17] In Punjab village, lands were divided into 1,898 fields averaging 1/5 th of an acre, and 2,890 holdings has each over three fields. In another village, 12,800 acres were found to be scattered in 63,000 fields.[18] The average size of holdings in some districts of Bihar was found to vary between 0. 28 acres and 0.81 acres at the last settlement. In the Chattisgarh division of M. P., it was common to find an average holding of 10 to 12 acres scattered all over the village in no less than 30 to 40 plots of land.[19] Mr. Keatinge mentions an extreme case where a holding of 2½ gunthas was partitioned among five brothers so that each brother got a holding of half a guntha, and each of the five brothers cultivated each of these five holdings in rotation.[20] In the Atgam village of south Gujerat it was found that on the average there are about 6 fragments of each holding.[21] In Madras in one village it was found that 170 ryots had 1,027 separate plots (1,658.10 acres) scattered in different places in five revenue divisions each holding averaging 6 plots.[22] According to Dr. Mukerjee, in Bengal there are many holdings of only 2 cottas or 0.4 acres.[23]

The practice of fragmentation of agricultural holdings in not peculiar to Indin alone but it occurs in European as well as Asiatic countries. This evil prevails in France, Switzerland, Germany, Bulgaria, China and Japan. A Chinese farm does not normally lie in a compact block but it consists of anything from 5 to 40 scattered squares, oblongs, strips, wedges and corners of land scattered over hedges, fields and sometimes at a distance of more than a mile from each other.[24] The reasons given for this arrangement by the peasants in China are the same as those given in the past by the peasants in Europe.

What should be the Size of Holdings ?

The Agrarian Reforms Committee has laid down three norms of the sizes of holding[25] :

(i) An economic holding, determined according to the conditions of different regions, which must afford a reasonable standard of living to the cultivator and provide full employment to a family of normal size.

(ii) A basic holding, below the economic size, i.e., smaller than the economic holding to which the rehabilitation treatment may be applied, uneconomic in the sense of being unable to provide a reasonable standard of living to the cultivator, but not inefficient for the purposes of agricultural operations.

(iii) An optimum holding, with a ceiling to the size looking to the managerial capacity and financial resources of an average cultivator in India. The optimum size of a holding should be, as a rule, not more than three times the size of the economic holdings. Exceptions are allowed in cases of joint families.

The Planning Commission in its First Five-Year Plan, has evolved the concept

17. K. B. Shah: Economics of Rural Bengal, p. 123.

18. Survey of Behrampur village, The Board of Economic Enquiry, Punjab.

19. Manual of Instructions on Consolidation of Holdings in C. P.

20. Keatinge: Agricultural Progress in Western India, p. 17

21. G. C. Mukhtyar: Life and Labour in a south Gujerat village, p. 114.

22. Thomas and Ramkrishanan: Op. Cit., p. 340

23. R. K. Mukerjee: Rural Economy of India, p. 51

24. R. H. Tawney: Land and Labour in China, p. 39

25. Agrarian Reforms Committee Report, p. 21-22

of "family holding". A "family holding" may be considered from two aspects viz., (i) as an operational unit, and (ii) as an area of land which can yield a certain average income. The Commission defines the "family holding" as an area equivalent, according to local conditions and under existing conditions of technique, either to a plough unit or to a work unit for a family of average size working with the assistance of a pair of bullock. It says that there should be an absolute limit to the amount of land which an individual may hold, and accordingly it has recommended that the States should work out detailed plans for fixing ceilings on holdings, keeping in view the agrarian problems in their respective areas. The imposition of ceiling has two aspects viz., (i) ceiling on future acquisition and (ii) ceiling on existing holdings. A ceiling on future acquisition exists in U. P. at 30 acres, in Delhi at 30 standard acres, in Bombay at 12 to 48 acres depending upon the class of land, in West Bengal at 25 acres, in Hyderabad at three family holdings, in Saurastra at three economic holdings and in M. B. at 50 acres.[26]

Ceiling on existing holdings has been fixed at 30 acres in U. P., in W. Bengal at 33 acres; in Punjab at 30 standard acres (upto 60 ordinary acres) and in the case of displaced persons 50 acres (upto 100 ordinary acres), in Hyderabad at 3 to 4½ times the family holding, in Bihar at a maximum of 30 acres of wet land for a family of 5 members, with the provision for an additional 5 acres for every additional member, in H. P. at 30 acres of land in the district of Chamba and lands assessed for Rs. 125 or more in the rest of the State, in Saurastra at 3 economic holdings, and in Delhi at 30 standard acres.[27]

26. Second Five-Year Plan, p. 194

27. India, 1956 p. 165.

According to the Planning Commission the following categories of farms should be exempted from fixing the ceiling:

(i) tea, coffee and rubber plantations,

(ii) orchards where they constitute reasonably compact areas,

(iii) specialised farms engaged in cattle-breeding, dairying, wool raising, etc.

(iv) sugarcane farms operated by sugar factories, and

(v) efficiently managed farms which consist of compact blocks, on which heavy investments or permanent structural improvements have been made and whose break-up is likely to lead to a fall in production.

Measures for Consolidation

It would be a positive advantage to the peasant if instead of having widely scattered small plots of land, he had an equivalent compact block of land. Compactness of land brought about with the purpose of liquidating the scattered nature of plots is the remedy of consolidation of holdings. "It is a process" says, Strickland, "where owners of right-holding tenents are persuaded or compelled to surrender their scattered plots and receive in their place an equal area of land of the same quality in one or two blocks. An exchange of this kind has in the past three centuries been carried out in all the countries of Europe".[28]

There are two methods of consolidation of holdings: (a) by voluntary co-operation between the cultivators themselves on the initiative of the persons belonging to that locality; and (b) by compulsory methods adopted by the Government. In case of voluntary methods there is too much delay and the process is very slow, and in some cases the money-lenders and the zamindars have placed considerable hindrances in

28. C. F. Strickland: Consolidation of Holdings, p. 4.

the way of consolidation work. But if compulsory consolidation is resorted to, the cultivator resents it and feels hurt. Further if the administrative machinery is weak and inefficient, oompulsory consolidation of holdings can create lots of difficulties.

Regarding the attempts at consolidation of holdings Dr. Darling says, " It is easy to chronicle the results but most difficult to produce them. Everyone has to be satisfied and all conflicting interests reconciled. The ignorant have to be enlightened and the stubborn conciliated. The poor, the weak and the speechless have to be as much regarded as the rich, the strong and the vocal. The only weapon is the tongue and the only means persuasion. Moreover, technical difficulties abound and underlying all is the peasant's passionate love for his land with the jealousy of neighbours that passions breed. In such circumstances the work must be slow. The marvel is that is done. "[29]

Consolidation in itself offers no permanent solution and the problem is likely to recur with every new generation. Restrictions are therefore necessary on future partitions, exchanges or transfers. Legislation has, therefore, been undertaken in Bombay, Punjab, U. P., and Berar. The Bombay Prevention of Fragmentation and Consolidation of Holdings Act, 1947, makes it illegal to create a fragment of less than the standard size notified in a particular area. The East Punjab Holdings Act, 1948, has enactments similar to those of the Bombay Act. In U. P. consolidation of holding was tried under the Consolidation of Holdings Act. The U. P. Government has fixed a minimum of 6½ acres as the limit, Hyderabad from 2 to 24 acres, Delhi 8 standard acres and M. B. and Bhopal each 15 acres, below which the land cannot be split. V. P. has prescribed as the minimum limit 5 acres for irrigated land and 10 acres for dry land.[30] In Bombay the Government have fixed minimum limits verying from 10 gunthas (one fourth of an acre) to 6 acres in all the districts of the pre-merger Bombay States. Assam has put minium limit to 12 bighas.

Legislation on Consolidation

The need for legislation for speeding up consolidation was felt early, the report of the Royal Commission on Agriculture drew attention to the need of undertaking surveys and checking further subdivision. Three stages may be marked in the history of legislation for consolidation. In the first stage legislation was permissive, as in the Baroda Act of 1920. In the second stage an element of compulsion, as in the C. P. Consolidation of Holdings Act, 1928, was introduced. In the third stage a scheme of consolidation can be enforced in any given area without willingness of the holders of the locality, as in the Bombay Small Holdings Act, 1927.

Special legislation for consolidation has been now passed by Bombay, M. P., Punjab, U. P., PEPSU, H. P., Jammu and Kashmir and Delhi. The legislation in M. P. and J. and K. permit the Government to exercise partial compulsion on a minority of landholders when a specified number of persons in an area express a desire for the consolidation of holdings. In the districts of Muzzafarnagar and Sultanpur of U. P. a scheme of compulsory consolidation of scattered holdings has been put into operation at an estimated cost of about Rs. 20 crores, to be borne by the beneficiaries themselves. This scheme is being extended to other parts of the State. Where consolidation has been actively undertaken, as in U. P.

29. M. L. Darling : Op., Cit.,

30. India, 1956, p. 166

and the Punjab, it is handled by co-operative societies, while in Bombay, PEPSU, Delhi and to some extent in the Punjab consolidation schemes have been included in the States' Five-Year Plans. Sub-letting has been prohibited in some States except in certain deserving cases. In many other States the Government has assumed the power to take over lands which remain uncultivated for more than a specified number of years and make arrangements for their cultivation.

Consolidation costs money and the difficulty of finding finances discourages the smooth working. Hence, there are three different kinds of arrangements for meeting the cost of consolidation : (1) In Delhi, M. P. and Punjab part of the cost is recovered from the cultivator in the shape of fees of consolidation. In the Delhi, M. P., and Punjab the cost of consolidation per acre came to Rs. 4-6-0, Rs. 4-4-0, and Rs. 1-5-0 respectively and the cultivator was charged a consolidation fee of Rs. 3-12-0, Rs. 4-0-0 and Rs. 0-12-0 respectively, (ii) the cost may be met entirely by the Government as in Bombay, where as a concession to the cultivator the work is done free of cost; and (iii) as in U. P. where the entire cost is to be recovered from the cultivator at the rate of Rs 4-0-0 per acre.

Progress of Consolidation:

The progress of consolidation in India in different States has been rather slow and only a few States such as the Punjab Bombay, U. P., PEPSU, M. P. and Delhi have made some headway with the work of consolidation. In the Punjab the work of consolidation was begun in 1920 on co-opreative lines but subsequently its scope was extended. By the end of March, 1955, in Punjab over 4 million acres of land had been consolidated, in M. P. 2.5 million acres and in PEPSU over a million acres. In Bombay and Delhi 1060 and 210 villages respectively had been consolidated. In U. P. the work of consolidation was taken up in hand by the co-operative societies since 1924. They have consolidated nearly million acres in the Districts of Ballia, Bijnor, Basti, Baharaich, Allahabad, Saharanpur, Sitapur, Gorakhpur, and Deoria.

Thus, while there is growing interest in almost all States in programmes of consolidation of holdings, much more needs to be done. In national extension and community project areas consolidation of holdings should be undertaken as a task of primary importance in the agricultural programme. The plans of several States for the second five-year plan include provisions for consolidation of holdings.

Consolidation of holdings through the Co-operative Societies

Apart from compulsion, the best instrument for securing the consolidation of holdings seem to be the co-operative society for the consolidation of holdings. The main merit of these societies is that it is voluntary, that it rests upon the education of the public opinion in favour of consolidation and upon the persuation of the landholders concerned. Once the voluntary agreement sponsored by the co-operative consolidation of holding society, the results are permanent as the landholders once they realised the evils of fragmentation are not to allow its re-emergence after sometime. But the greatest difficulty in co-operative methods is that it is slow, the work of consolidation in a given area might be held up if a small and obstinate minority refuses to agree to any scheme of re-allotment of lands. Other hinderances to consolidation through co-operative societies are the indebtedness of the ryot on large scale, the lethargic attitude of the people, senimental attachment to

land, want of adequate areas of the same kind of land for exchange, lack of adequate and persistent propoganda and the lack of efficient staff to carry out the legislative measures.

Advantages of Consolidation of holdings

As a result of consolidation of holdings, rents have risen, yield of crops has increased, new and waste lands have been cultivated, and wells have been dug to irrigate, waste of lands in hedges and boundary lines have been removed and consequently disputes and litigation have declined. The village records have been simplified and the cost of future settlements have been lessened, improvements in communication have taken place and the layout of the villages has been improved.

Consolidation of Holdings in the Foreign countries

In countries like France, Belgium, Germany, Switzerland, Denmark, Holland, Japan and Russia, the State has intervened with compulsory legislation regarding the consolidation of holdings. All these countries have solved this problem through a number of remedial measures partly by the purchase of small parcels to round off their own holdings by the peasants, partly by limiting the size of an average family through birth control and partly by legislation. A study of the movement of consolidation of holdings in these countries brings out many interesting points of similarity in their efforts and experiences. **Firstly**, all of them found that the improvement of agriculture was hampered by fractionalisation of holdings and therefore consolidation formed an important link in any scheme of agricultural development.

Secondly, all of them had to take administrative and legislative action for restripping because private agreements at consolidation without the force of law failed.

Thirdly, to carry on the work of improvement consistently and steadily, specially trained staff had to be engaged resulting in a large expenditure.

Fourthly, the governments had to give liberal grants to meet the cost of restripping.

Fifthly, an adequate financial help had also to be given to enable the farmers to improve their methods and technique of cultivation.

Sixthly, the legislation has been adopted in a number of countries and embodied in these principles: (i) Compulsory expropriation of existing holders, (ii) compulsory reconstituting of holdings at the instance of a certain proportion of land holders or in some cases without it, (iii) subsequent indivisibility of reconstituted holdings, (iv) exemption of holding from seizure for debts, and (v) prevention of reconstituted holdings from being combined with other holdings.

Co-operative Village Management

Consolidation of holdings does not promise to give the cultivator an economic holding. If the cultivator has a small area of land scattered in different parts of the village consolidation will bring the land together but it cannot possibly increase the size. In order, therefore, to provide economic holding for each cultivator a much bigger effort will be required as is envisaged in the First and Second Five-Year Plans under the Co-operative Village Development.

According to the Planning Commission the village should be made the primary unit of management in agriculture. The primary object of village management is to ensure that the land and other resources of a village can be organised and developed from the standpoint of the village community through the agency

of village panchayats, goan sabhas or some other similar organisation of the people in the village. During the transition to co-operative village managment lands in the village will be managed in three different ways : Firstly, there will be the individual farmers cultivating their own holdings, Secondly there will be groups of farmers who pool their lands voluntarily in their own interest into co-operative working units. Thirdly, there will be some land-such as common lands of the village, or the lands available for the settlement of the landless-belonging to the village community as a whole.

The main instruments for achieving co-operative village management are :

(i) The national extension service and programmes for increasing agricultural production and developing other allied activities, (ii) the village panchayat and the functions assigned to it as the development ageny at the village level, (iii) steps taken to develop co-operative credit, marketing, warehousing, processing etc, (iv) programmes for the development of village industries, (v) programmes for promoting and assisting voluntary co-operative farming societies, and (vi) the development of the community sector within the village economy.

Census of holding

The census of land—holding and cultivation has been carried out in 22 States. In 10 States it has been based on complete enumeration of all holdings viz., Andhra, Bombay, M. P., Madras, Hyderabad, M. B., Saurastra, Ajmer, Bhopal and Cutch. In 7 States the census has been based on complete enumeration but was restricting to holdings of 10 acres and above, viz.. Punjab, Pepsu, Coorg, Mysore, H. P. and V. P. In U. P. the sample survey has been carried out. While in Bihar, Rajasthan, Orissa and Travancore-Cochin, sample surveys have also been undertaken. In Assam and West Bengal the State Governments had earlier collected some data regarding land holdiings.

The data collected relate to the size and distribution of (a) holdings classified according to area owned, and (b) holdings classified according to area under personal cultivation.

AGRICULTURAL PRICE SUPPORT IN BRITAIN

THE system of price support for British farmers ensures that the guarantees given each year fit the immediate needs of the agricultural industry, and at the same time allows farmers to plan ahead, under increasingly free market conditions, "with long-term assurances of support."

Although Britain is a densely-populated, industrialized country, relying on imports for half its food supply, agriculture remains one of its largest and most important industries. It employs about one million persons—about 5% of the total labour force and provides about 5% of the gross national product.

Like many other countries, Britain has the problem of on the one hand maintaining farmers' incomes, through price guarantees, to ensure that food production at home—a strategic necessity—remains adequate for the country's needs, while at the same time striving to keep food prices as low as possible.

In Britain's case, there are two further considerations to be weighed. British

agriculture tended to fall into a decline before 1914 because the population was more profitably employed in industry. Reversing this trend is a long-term task. At the same time, Britain has a special obligation to admit agricultural products from the rest of the Commonwealth without tariffs because the economies of many Commonwealth countries are heavily dependent on such exports to Britain. All these points have to be taken into account in the support programme.

The Beginnings of Support

Britain became exceptionally dependent on imports of food and feeding-stuffs during the 19th century because of the huge growth of her industry and population. The new countries abroad, which British enterprise was helping to develop, made agricultural products available at very low prices, and from 1872 on there was a continuous decline in the area of land being cultivated in Britain, with a much greater concentration on the production of livestock and livestock products. It was not perhaps realized how much this was weakening Britain strategically until the U-boat successes in the first World War forced Britain to adopt emergency measures to grow more food. Agriculture declined again in the late 1920's, especially when world food prices began to fall catastrophically during the depression.

Low food prices abroad helped Britain's "terms of trade," but at the same time it was realized that some parts of home agriculture had to be supporter, and the first long-term programme of governmental assistance was initiated. This assistance, which included, after 1931, tariffs, subsidies and quotas, had a stabilizing effect on the prices of grain, cattle and milk, developed the sugar-beet industry, and encouraged the cultivation of submarginal land. Commodity commissions–government-appointed semi-independent organizations–administered the subsidies and other forms of help, while producer-controlled commodity Marketing Boards regulated the sale of potatoes, hops, pigs (for bacon) and milk.

The Second World War brought all the food business—growing, importing, selling, and even consumption—under direct government control. For shipping reasons, home production of bulky commodities had to be stimulated. Bread grains, potatoes and milk became all-important as the foundation of a war-time diet which would provide both bulk and nutritive value, and production was concentrated on these commodities with corresponding reductions in the fattening of stock for meat. Once again, the fertility storied in the soil could be used in emergency for increasing production of vital crops.

When the war ended, and balance of payments problems became over-riding, it was generally acknowledged that the incentives that had proved so successful during the war had somehow to be carried on into the peace. Production would thus be maintained, or even increased, and food imports would be kept to the minimum.

The 1947 Act

This aim was incorporated into the 1947 Act which was based on the principle that the Government would provide agriculture with a system of guarantees which would ensure a stable and efficient agricultural industry capable of producing such part of the nation's food as in the national interest it is desired to produce in the United Kingdom and of producing it at minimum prices consistently with proper remuneration and living conditions for farmers and workers in agriculture and

an adequate return on capital invested in the industry.

Under this system, the Government provides guaranteed prices and assured markets for certain products—cattle, sheep, pigs, milk,eggs, wheat, barley, oats, rye, potatoes, sugar beet and wool, —which account for roughly four-fifths of the gross agricultural output. Every year, usually in February, the economic conditions and prospects of the industry are reviewed by the Government in consultation with representatives of the agricultural producers, namely the National Farmers' Union of England & Wales, the National Farmers' Union of Scotland, and the Ulster Farmers' Union.

Annual Review

Production objectives for the next two, three or four years are set, and the scope and relevance of the statistical material agreed upon, before the review proper begins.

National economic and budgetary considerations, the likely cost and availability of home and imported supplies, and the need to level out seasonal gluts and shortages are all taken into account in deciding the production target for each industry.

Three sets of data figure prominently in the discussions :

(a) Estimates of the aggregate net income or general level of profitability of the industry ;

(b) Aggregate cost increases since the last review ;

(c) A body of statistics of farm incomes and expenses per farm for different types and sizes of farms.

If agreement—perhaps with some margin for further discussion—can be reached on an appropriate total adjustment of farmers' gross receipts from the "review" products, the next process is to translate that figure into suitable adjustments to commodity prices. At this stage, account is taken of statistical evidence of the relative profitability of various types of farming, and of any desired change of emphasis as between different forms of production (e. g. from milk to meat).

Finally, in the light of the information provided by the official negotiating team, the Government reaches decisions on the guaranteed prices to be paid during the appropriate periods for the " review " products.

In alternate years, basic minimum prices for livestock and livestock products are fixed for several years ahead. In return for this system of guarantees, the Government has the power to call for certain standards of efficiency in farming. These standrds have been maintained through the voluntary Country Agricultural Committees, though any action to dispossess—on the rare occasions necessary—has to be taken by the Minister under powers granted by the Acts.

The striking progress that has been achieved can be summed up in the fact that whereas before the war two-thirds of Britain's food had to be imported, the proportion is now about one-half.

The achievement is the more remarkable because there has been no comparaable increase in the total amount of land in agricultural use. Indeed there has been a slight reduction.

Long-term Planning

As world supplies of food, and Britain's own trading position, have improved in the last few years, the import of food and all domestic trading in food has been restored to private enterprise. With this greater freedom, the agricultural industry has been exposed to greater competition, and the need to maintain

its prosperity with less assistance from the Exchequer.

The removal of controls brought changes in the methods of guaranteeing prices, which in turn caused revisions in the procedure of the Annual Reviews. In particular, more weight had to be given to market conditions, and the records of private traders began to take the place of Government accounts in assessing the market prospects of the industry. At the same time, it was recognized that Annual Reviews, by their very nature, could give the industry assurance for only a comparatively short time ahead, and that if the industry was to be able to make long-term plans it would need correspondingly longer periods of market guarantees. The Government therefore undertook to consider whether "any practicable means could be devised of providing more effective long-term assurances of support." Its findings were published in a White Paper "Long-term Assurances for Agriculture" in November 1956.

In practice, says the White Paper, the prices determined for crops at the Annual Review, and the minimum prices fixed for livestock and livestock products every other year have not proved as effective as was intended. This is because there has been no way of dealing with changes in circumstances, particularly cost increases, which occur after the minimum prices have been fixed, but before they become operative. A new form of assurance has therefore been devised which will be more effective in keeping the minimum guarantees up to date.

New Methods For Guarantees

Until this year, the Annual Review has fixed the crop price guarantees for the harvest of the following year, and the minimum prices for livestock and livestock products every other year for a period of two years at a time, three to four years ahead.

Starting with the 1957 Annual Review, crop price guarantees will be determined for the immediately succeeding harvest instead of the harvest of the following year. The guaranteed price for each individual commodity determined at an Annual Review, will be not less than 96%of the guaranteed price set by the previous Annual Review. In addition, for livestock and livestock products, there will be a limitation of 9% in any three years on the amount by which the guaranteed prices of any of these products may be reduced.

As well as guarantees for individual commodities, the Government have undertaken to maintain each year the total value of the guarantess at not less than 97½% of the total value of the preceding year, plus cost increases or minus cost decreases in review commodities since the last Annual Review. The total value of the guarantees for this purpose is estimated to be of the order of £1,150 million a year at present. This is a completely new proposal, and while it provides for due account to be taken of factors which might require a reduction in the value of the guarantees — for example Exchequer liability, market requirements, increasing efficiency — the new level in any year cannot be less than that required by the minimum assurance. These arrangements will impose a major limitation on the Government's discretion to reduce the value of the guarantees and should give substantial protection to the net income of the industry.

Under the original system, provision was made for a special review of conditions in the farming industry if substantial changes — e. g. farm wage increases–occurred between the holding

of a normal annual review; adjustments in prices were made where these were found to be necessary. In establishing the new system for Annual Reviews, the Government proposed and the farmers accepted, that while provision for special reviews should continue, these will be held only to meet exceptional circumstances, if, for example, the effect of a cost change on review commodities for the remainder of any year is more than ¾% of the total value of the guarantees. As the White Paper pointed out, the idea of automatic recoupment of cost changes, particularly of wage changes, is out of line with current economic needs or general economic policy.

Farm Modernization Programme

The White Paper recognized that efficient working on many farms today is still handicapped by inadequate or out of date farm buildings and other permanent farm equipment. Modernization of these items in the Government's view offers the best way of making an effective contribution towards lowering production costs. Provisions already exist for grants for improvement schemes in hill farming and livestock rearing areas, and, throughout the country for drainage and water supply schemes, and for silos, while assistance for farm housing is available under the Housing Acts.

Now, however, the Government propose to introduce a wider scheme of grants to help the farmer in providing permanent fixed equipment and making long-term improvements to the land. Under this new scheme, grants at 33⅓% would be payable for all the main permanent improvements not already covered by grant, including individual improvements in livestock rearing areas. With these new grants new investment in permanent fixed equipment could amount to £ 320 million over the next 10 years, an increase of some 30% over the same period at the current rate. The total grant payments involved, under new and existing legislation might be some £95 million.

The improvements to be expected under the scheme will be of particular benefit to small farmers, who as a rule are mainly concerned with livestock production, in which building costs are a large item. As to the farmer's own share of the cost of an improvement programme, the Agricultural Mortgage Corporation, the Scottish Agricultural Securities Corporation and the Land Improvements Company have given assurance that no credit-worthy owner need expect to find it difficult to raise a loan at current interest rates to cover the major part, if not all, of his share of the cost of an approved scheme.

In making these proposals for a long term policy for agriculture the Government, in the words of the White Paper is giving "a comprehensive assurance to the industry" of its determination "to provide the support required for maximum economic and efficient production." Any necessary changes will be made gradually, full account will be taken in consultation with the industry's leaders of all the factors affecting the fortunes of the industry, and the industry will be given still further encouragement to improve its capacity to produce as efficiently and economically as possible. This, the White Paper concludes, "should assure a reasonable return to the industry and provide a sound basis for planning ahead."

VARIETAL SCHEDULE IN IMPROVING SUGAR RECOVERY PERCENT CANE

By : **S. K. CHOPRA**

THE sugar recovery percent cane figures of The Lord Krishna Sugar Mills Ltd., Saharanpur, for the last few years are given below :—

S. No.	Year	Sugar Recovery % Cane
1.	1950-51	9.42
2.	1951-52	8.71
3.	1952-53	9.52
4.	1953-54	9.45
5.	1954-55	9.39
6.	1955-56	8.85
7.	1956-57	9.66

From the study of the above data it can be concluded safely that there is no improvement in the sugar recovery. With the above basic facts as a background I discuss below improtant features regarding varietal position in the Western part of Uttar Pradesh with particular reference to Saharanpur Sugar Factory.

1. The recovery graph of the whole season indicates low recovery in November, December and a steep decline from 15th April downward. The opening recoveries are as low as 8.7% in the month of November and closing recoveries 6.4% in the month of June. There is prime need for raising two arms of the curve and particularly the second one which shows a steep decline in the later part of the season. The extended crushing season naturally leads to decline in recovery %, particularly in the very early or late harvests. The factory owners desire to overcome this problem of low recovery by introduction of varities that record high sucrose in the respective crushing seasons.

2. The early released variety in the area is Cos. 321 and mid season and late released varieties are Cos. 245, Cos. 421 and Cos. 515. Cos. 356, a mid late variety is approved for all Khadar and Tarai areas. There is necessity of proper planning and apportioning of areas under the different early, medium and late ripening varieties in each factory zone. This will help in extending the number of crushing days and the factory is then able to obtain appreciable recoveries both in the begining and at the end.

3. The earliest ripening variety is CoS. 321. CoS. 245 is an early medium cane. The other varieties are good in their own way but do not have such high sucrose contents as CoS. 321 during the periods of maturity. This variety gives satisfaction both to the cultivators and mill owners since it is both high yielding and high sugared as is evident from the following table. The figures are averages of 3 years, 1947-48 to 1949-50, recorded at Sugarcane Research Station, Muzaffarnagar.

Variety	Yield in mds./acre	Percentage sucrose.			Sugar/acre in mds.		
		Oct.-Dec.	Jan. to March	Average	Oct.-Dec.	Jan. to March	Average.
CoS. 321	868.4	13.96	18.77	16.37	103.7	116.1	109.9
CoS. 245	851.2	12.42	16.69	14.56	86.9	97.7	92.3

From average cane yields, sucrose in juice and estimated out-turn of sugar per acre, one can get an idea that it is profitable to cultivate these two varieties both for the gorwer and the factory.

4. Co. 453 has deteriorated in the area due to one or the other reasons and the Cane Department has discarded it. Now we are left with Co. 356 and Co. 421 only which are mid-late ripening canes with high tonage and may thus be helpful in extending the crushing season. Co. 356 is especially suited for the Tarai and Khadar areas. The yield of these two varieties can favourably be compared with that of Co. 453 and the appear to be agriculturally superior also.

5. Keeping in view of the long crushing season the area under different varieties is recommended as follows :—

CoS. 321	50%
CoS. 245	20%
Co. 421 & Co. 356	30%

In this way the factory can start from 1st November and close down on 31st May and will be able to show a marked improvement in sugar recovery. However, the introduction of varietal schedule is faced with problems, which require to be handled carefully by both the factory owners and the cane growers. The varietal schedule can be a adjusted conveniently as per requirements of the areas.

6. When the varietal position in the zone has improved, then there is the question of crushing it maturitywise. By maturitywise I mean here that the factory is given cane of CoS. 321 for crush from 1st November to 15th February, then CoS. 245 from 15th February to 31st March and Co. 421 and Co. 356 in months of April and May. The ratoons of early and mid early canes can be crushed profitably quite early in the season. By having this varietal schedule of crushing both yield and quality of cane are improved considerably to meet the growing demand for cane from the sugar factories and to enable them to produce sugar at competitive rates. In the matter of cane quality and high recovery of sugar % cane, there has been stagnation and even some deterioration lately., which is clear from the following statement:—

So. N.	Year	Yield of cane/acre (Tons)	Average recovery of Sugar%Cane
1.	1950–51	13.33	10.03
2.	1951–52	12.67	9.57
3.	1952–53	12.02	9.98
4.	1953–54	12.54	10.08
5.	1954–55	14.25	9.92
6.	1955–57	12.98	9.83

The factories can register an improvement in sugar recoveries if cane supplies are made to them maturiywise.

7. It will be noted that inspite of all efforts the area under CoS. 321 has not increased appreciably. It has taken too long to be multiplied for a number of reasons. The main reason for this is paucity of field staff and this staff being not trained and also not properly supervised. For the last three or for years The Lord Krishna Sugar Mills Ltd., Saharanpur has been giving a liberal premium of 2 Annas per maund on the supply of CoS. 321 and it is discouraging to see that no justification has been done to it. The Government subsidy is in addition to the factory premium.

8. For the last three years we had been making efforts to arrange the supply of cane variety-wise. The Cane Commissioner had on his own issued circulars to encourge varietywise supply to the factory but the Co-operative Union could not give us 100% co-operation in this respect. To achieve target of our recovery the Co-operative

Union has to be very enthusiastic about the scheme of varietal schedule of crushing. Our experience of the last three years shows that this can be done provided the Government staff have the missionary spirit of service to the cultivators as well as to the industry and their is a close inspection of their work.

Conclusion

The importance of varieties, increasing yield and recovery percent, cannot be over emphasized. Prosperity of the Indian Sugar Industry depends on adequate supplies of high quality cane. The cane acreage has increased from 30 lakh acres in 1932-33 to 44.66 lakh acres in 1955-56 but the yield of cane and sugar recovery have not improved. It is the duty of the field workers to give it a serious thought and improve the varietal position of the factory reserved areas. Then the Co-operative Union is required to supply cane maturitywise to the factory and enable it to show much better results than the previous years.

INSECTICIDES AND THEIR SAFE USE

By: **SHREE NARAIN SINGH**

INSECTICIDES are the substances that are used to destroy or otherwise control insects or their near relatives. Man has needed and used insecticides since his inception on earth as the struggle between man and insect has been continuous. Insects always try to wipe out man's existence from the earth. They transmit human diseases, damage our commodities and crops and parasitise our cattle. So far as damage to crops is concerned, they destroy nearly 10 per-cent of our entire production the value of which comes to about 400 crores of rupees in India alone.

Various types of mineral insecticides were in use previously. But most of these insecticides, though lethal to the insects, were toxic to man, cattle or crops. The search for more efficient insecticides has been vigorous during the last two world wars as the army needed protection from the insect menace in the forests and valleys. Powerful insecticides such as DDT and BHC were invented during the last two decades. After that more powerful insecticides such as pyrethrum, nicotine sulphate and parathion are coming up in the market and one has to choose particular insecticide for use against specific pest. The organic or inorganic insecticides now in use can be broadly divided into three categories. Some are stomach poisons and bring about mortality of the insect when taken in the system through mouth. Such poisons are used against insects which have got biting and chewing type of mouth parts and which eat away the plant issue.

Next type of insecticides are contact poisons and bring about knock-down of the insects simply by contact action. The insects which have got sucking and piercing type of mouth parts or the chewing type are killed in this way. The third type of insecticides are the fumigants which are generally liquid or powder but when exposed to air volatilise at normal temperature forming fumes. These fumes enter the respiratory system of the insect, paralyse the nerves and cause death. The fumigants are effective against all types of insects but they can be used only in some enclosed space such as rooms, glass house or

holes. These insecticides are applied as dust, suspension in water, emulsion or as fumes. They are used on crops by hand sprayers, hand dusters or by power driven machines. Dusting of insecticides is done to make a deposit of the insecticides on plant surface for killing crawling insects or to charge the environment with fine dust so that flying insects may be killed. Dusting can be efficiently done only in calm weather. Spraying is done for flying as well as for crawling insects. For underground pests such as termites and cutworm soil treatment with insecticides is done by mixing the insecticides with soil.

The use of insecticides has been very common these days particularly after the establishment of Plant Protection Service and the Community Projects. Though insecticides are indispensable for protection of crops, their indiscriminate use involves certain hazards. It is essential, therefore, that extension workers and the agriculturists have proper education about right use of the insecticides. Wrong use of the insecticides results into following types of harms to the crop as well as to the human beings.

1. **Toxicity to the crop :**—Most of the insecticides scorch the plant surface when they are used at higher concentration. Certain abnormality in the root system or on fruits also takes place after soil treatment or spraying. DDT, BHC, phosphatic insecticides, nicotine sulphate and lime sulpur harm the crop when used at more than prescribed dose.

To do away with such dangers it is better to ascertain fully the proper dose and method of application of these insecticides from the State Entomologists or local plant protection worker. Cucurbits such as pumpkins and gourds are very susceptible to organic insecticides particularly DDT and hence the latter should never be used.

2. **Tainting of the food material:**—Tainting or development of some undesirable taste and flavour takes place when certain insecticides are absorbed by the vegetative portion of the plant that is edible. Such complaints are common with potato, sweet patato, onion and turnip when they are sprayed with technical BHC.

To avoid such tainting the use of DDT, lindane or pyrethrum is recommended because these insecticides do not taint the food.

3. **Residual effect of the spray deposits :**—Many of the insecticides have got long residual effects after they are used on crops. Such spray residues present hazards when they are used on fruits and vegetables which are generally taken raw or whose vegetative part of the body is edible. If the fruits and vegetables having traces of insecticides are consumed for a long time, the insecticides get accumulated in the human system with bad effects. The Food Technological Research Institute Mysore has recently warned against use of DDT on table potato that is being done by potato dealers now for protection against rotting in the godowns. To eliminate hazards due to spray residues it is better not to apply insecticides on fruits and vegetables very close to the harvest. If the use of insecticides is indespensable it is safer to use pyrethrum, nicotine sulphate or BHC which have get less persistent effect. The treated produce must be thoroughly washed to remove the spray residue before it is sent to the market or to the kitchen.

4. **Injury to the operator:**—Chemicals like calcium cyanide, Lead arsenate, Parts green and Phosphatic compounds

are poisons and cause fatility when taken in wrongly. The organic insecticides such as DDT, BHC, aldrin and dieldrin though apparently harmless are also lethal but at higher dose. The injury from insecticides takes place as a result of inhalation of dust or fume, spill in eyes or skin and absorption through skin or would.

To avoid such harms the operator be equipped with protective gloves, goggles, clothing and respirator at the time of applying insecticides. If the material is spilled on the skin or clothing a bath with soap and water should be taken and clothing changed. The operator must be well acquainted with precautions to be taken while using particular insecticides. The firms manufacturing or processing the insecticides should put "POISON" label on the container.

Awareness of hazards and adoption of safeguards in using pesticides is urgently needed because of their growing use. We need not be frightened with the modern insecticides but we should use them scientifically and safely to get maximum good with least harm.

IMPURITIES IN RAW WOOL

By: **R. K. SHUKLA**

IMPURITIES may be defined as any foreign matter in a commodity in any ratio. They have nothing to do with the value of the commodity. Even if a commodity of high value is present in another of lower value, the former will be termed as impurity in the latter e. g. while purchasing cotton the wool present in the lot will be classed as an impurity although the value of wool is much higher than that of cotton.

The impurities are responsible for a greater extent to reduce the market and economic value on one hand and are perrenial source of trouble to the manufacturer. The shrinkage in wool is due to the presence of impurities which at times be 60 to 70% or even higher.

Classification

Impurities, as present in wool, can be classfied into three broad heads according to their source or origin. They are :—

1. Natural
2. Acquired

and 3. Applied

Natural impurities are sub-divided into (i) water soluble and (ii) non water soluble.

Generally the impurities present in other commodities fall either in only one or at the most two of the above types in a variable degree, but in case of wool all the three types of impurities are usually found on the sheep's back. A brief description of the causes of these impurities together with the methods of their removal is discussed in the following paragraphs.

Natural

This class includes all those impurities which get into the raw wool in normal course and cannot be disposed off inspite of every care taken of the sheep. They are the oils, fats, waxes, secreted by the subcutaneous glands of the animal. They are insoluble in water but can, however, be removed away by mixing the water with washing soda or soap.

Besides the above described impurities, dried perspiration or suint which is composed of Potash salts of lower fatty acids, potassium chloride, and other

inorganic salts, present can be removed by washing wool with cold water.

The presence of fats and grease in the wool varies from breed to breed as well as within the same breed. The breeding rams always produce wool with higher percentage of fats and at times it may be as much as double the quantity of that present in the sheep of the same age. The composition of the wool fats as well as the soluble salts varies considerably according to the breed of sheep, duration after which the wool is clipped and the atmospheric temperature during the growth of the wool. Sheep growing in hot regions produce wool having more of soluble salts than the sheep growing in cold climates. The conversion of wool from white to yellow in the presence of sun light is a chemical change which takes place due to the presence of sulphur in the wool. This phenomenon is only observed in hot regions. The presence of grease in wool does not allow it to felt on the body of the sheep. The impurities in this class cannot be eliminated altogether but can only be reduced by making an improvement in the living conditions of sheep.

Acquired impurities—The wool on the back of the sheep gets laden with the acquired impurities which they pick from the environments in which they live and graze. The various impurities that fall under this class are sand, dirt, burrs, vegetable matter, seeds, bark of trees, thorns, etc. The grease present in wool on the body of the sheep acts as an adhesive and the wool fibre gives protection to all such impurities. In sandy tracts where wind velocity is high, the heavy dust particles remain clinging to the locks of the wool fibre. The proportion of the acquired impurities very much depend upon the area and the surroundings in which the sheep are kept. An other disadvantage due to the presence of vegetable matter, is that it does not allow the wool fibre to absorb dyes properly. Special treatments have to be done with every type of impurity present, before the wool can be spun into yarn and finally prepared as finished goods.

When mechanical methods like sticking, carding and combing fail to give the desired effect a chemical method called "Carbonation" has been evolved by which the impurities specially of vegetable origins are removed. This method consists of treating raw wool with 4 to 6% sulphuric or Hydrochloric acid thereby reducing the vegetable matter present in wool to carbon which is removed mechanically later on.

The time of shearing is also an important factor. If it is done just a few days after the rains the fleece will contain much earthy matter, and will be dung soiled. In the same way if shearing is done after a dust storm the fleece will contain a lot of dust. Twenty-five fleeces at random were examined and the visible acquired impurities were removed by hand as far as possible which totalled at times to 6 oz per fleece. The average was 3 oz per fleece which works out at about 12% of the total wool produced per sheep.

The weed seeds in general and that of burrs in particular keep their viability for a pretty long time and flourish well under vide and varied climates. Wool owing to its high economic value undertaken both intra State and inter continental journeys, so there has been a good mix up of these weeds throughout the country as well as abroad. The burr which was slightly unknown in Punjab has now become very common due to the importation of wool from Rajasthan and U. P. The winter annuals get a good start if there are timely rains and reach

maturity when the sheep are about to be clipped during winters. The seeds get stuck to the wool once more and the vicious circle of their multiplication starts.

An appreciable reduction is possible if the sheep are allowed to graze in pastures which are free from weeds, the pans are kept clean and have got a pucca floor. In America a successful effort has been made to eliminate this class of impurity in wool to a considerable degree by providing jackets to sheep which keep their body covered and do not allow the dust and other impurities to settle on the fibre. It has also been reported that the jackets do not effect the growth of the fibre. This method is worth a trial in India at a large scale.

Applied impurities—Under this category is included all the foreign matter which is applied intentionally with some specific purpose. The main reasons as to why the impurities are applied to wool are (i) Identificational, and (ii) Medicinal.

Since sheep do not differ much from each other in size, colour and shape so they are branded by special locally made fast colours in varying patterns to avoid confusion of mixing of sheep among the flocks owned by different farms. At times Tar or Paint is also applied for identification purposes. The farmer makes no economy in the application of these identification marks, little knowing the loss that he suffers by deterioration in the quality and the trouble caused to the manufacturer in the removal of these colours at various manufacturing stages. On an average one to two oz, of such coloured wool is obtained per clip; the loss then being to the order of about 7 %.

The loss caused to the machinery and the trouble caused in the removel of such colours was assessed so much that branding had to be banned in South Africa.

The sheep are very susceptible to diseases as well as to injuries because of the attack by animals like hounds, wolves, etc. During the course of their treatment medicines like murcurochrom, Tincher iodine etc. are applied to the body of the sheep. Consequently a part of the fleece is stained which is almost a permanent sort of thing. This loss of wool is much less as compared to the one described above and is unavoidable.

There is ample scope for the production of such branding fluids which may not be very permanent in nature and their application should be done on the forehead and not on the shoulders. Efforts should be made to popularise the notching method by which the sheep's ear are punched with a particular mark.

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